REMARKS/ARGUMENTS

Status of the Claims

Claims 1-31 are pending. Claims 3, 11, 20-31 have been withdrawn. Claims 1, 2, 4, 8, 9 and 15-18 have been amended. Claims 1, 2, 4-10 and 12-19 stand rejected and are under consideration.

Support for the amendment of claims 1 and 4 can be found on page 5, lines 23-32 of the specification. Support for the amendment of claims 8 and 9 can be found on page 6, lines 1 and 2. Support for the amendment of claims 15-18 can be found on page 5, lines 23-32 and page 8, lines 8-13.

Claim Objections

The Examiner has objected to claim 2 for ending in two periods. The claim has been amended accordingly and withdrawal of the objection is respectfully requested.

Claim Rejections – 35 USC 112, 2nd paragraph

The Examiner has rejected claims 15-16 and 19 under 35 USC 112, 2nd paragraph as allegedly failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. The Examiner states that the term "prevention" lacks antecedent basis. Applicants have amended claims 15 and 16 by deleting the term "prevention." Applicants therefore respectfully request withdrawal of the rejection.

Claim Rejections – 35 USC 101

The Examiner has rejected claims 1, 2, 4-10 and 12-19 under 35 USC 101 because the claims allegedly lack patentable utility. The Examiner states that "at the present time, there is no evidence of record that would indicate that the broadly claimed 'X-nitro compounds' have the utilities set forth in the specification." The Examiner also states that "nowhere in the specification have Applicants demonstrated the alleged biological activity of the claimed compounds."

Applicants have submitted herewith the declaration of Richard F. Trecartin, Applicants' attorney of record and a copy of US Provisional Application No. 60/890,167, filed February 15, 2007 ("'167 Application"). The '167 Application discloses ABDNAZ

on pages 17 and 18. This is a nitrocarbon containing two nitro groups. As shown in the Examples of the '167 Application, ABDNAZ increases the production of reactive oxygen species in human colon cancer cell line HT29 and murine squamous cell carcinoma cell line SCC VII (see Example 1 and Fig. 1). ABDNAZ was also shown to inhibit proliferation, induce apoptosis and inhibit bcl-2 oncogene expression *in vitro* in HL60 cells, which is an acute promyelocytic leukemia cell line used to model cancerous disorders (see Examples 2 to 4). Furthermore, in an *in vivo* mouse model, ABDNAZ both delayed and reduced tumor growth (see Example 12). Thus, the '167 Application shows that ABDNAZ has pharmacological activity as shown by both in vitro and in vivo models. Courts have repeatedly found that the mere identification of a pharmacological activity of a compound that is relevant to an asserted pharmacological use provides an "immediate benefit to the public" and thus satisfies the utility requirement. MPEP 2701.01(III). Applicants thus respectfully request withdrawal of the rejection.

Claim Rejections – 35 USC 112, 1st paragraph (written description)

The Examiner has rejected claims 1, 2, 4-9 and 12-19 under 35 USC 112, 1st paragraph, for allegedly failing to comply with the written description requirement.

The Examiner claims that the Applicants have failed to provide any reasonable specific structural characteristics, chemical formula, names or physical properties that would provide adequate written description of the genus of X-nitro compounds. Applicants disagree. Page 5, lines 7-9 of the specification discloses that "X-nitro compounds are generally organic compounds substituted with one or more nitro groups (*i.e.*, nitro compounds) but also include nitrate salts (*e.g.*, ammonium dinitride, aluminum trinitride, *etc.*)" The specification, disclosing specific physical properties of X-nitro compounds, states that, for example, "X-nitro compounds have a high enthalpy of formation[,]" "may also be reduced at low reduction potentials[,]" and without being bound by theory, form free radicals upon irradiation or reduction. See page 4, lines 32 and 33; and page 5, lines 9-11 and 19. As admitted by the Examiner, the specification on page 7 illustrates 11 specific X-nitro structures, and chemical names are provided on page 6. Other specific structural characteristics of X-nitro compounds, as reflected in the amended claims, include having a nitrocarbon, a nitroamine or a combination of a

nitrocarbon and a nitroamine. The ratios of these different groups are also described for different embodiments. See specification, p. 6, lines 4 to 16. The specification therefore fully lays out structures, formulae, names and properties of the X-nitro compounds recited in the claims, which are thus in compliance with the written description requirement. Withdrawal of the rejection is therefore respectfully requested.

Claim Rejections – 35 USC 112, 1st paragraph (enablement)

The Examiner has rejected claims 1, 2, 4-9 and 12-19 under 35 USC 112, 1st paragraph, for allegedly failing to comply with the enablement requirement.

The Examiner alleges that Sausville et al., *Cancer Research*, 66, 3351-3354 (2006) and Johnson et al., *British J. of Cancer*, 84, 1424-1431 (2001) both show that treating cancer is unpredictable, particularly in the case of a single compound or genus of compounds being used to treat any and all cancers. Applicants, however, submit that Sausville and Johnson do not teach that the art is as unpredictable as the Examiner suggests. Sausville teaches that drugs with evidence of anticancer activity in vitro "frequently" – but don't always – fail to produce useful activity in humans. In fact, Sausville on page 3353, column 2, paragraph 2 concludes that

> it is important to note that no clinically approved agent today for the treatment of cancer including targeted agents has lacked activity in conventional preclinical *in vivo* models. We are unaware of any molecule clinically approved as safe and effective, which is devoid of activity in every mouse model tested.

Thus, Sausville teaches that there is indeed a correlation between positive preclinical results and ultimate clinical effectiveness. Likewise, Johnson teaches that for 39 agents, tumor model data did not *closely* correlate with clinical results. See Johnson, abstract. This teaching does not foreclose *any* correlation between *in vivo* models and clinical results, since Johnson teaches in the next sentence that "for compounds with in vivo activity in at least one-third of tested xenograft models, there was correlation with ultimate activity in at least some Phase II trials." Thus, both Johnson and Sausville teach that preclinical models at the very least show some correlation with positive clinical results. The enablement requirement requires only a "reasonable" correlation; a

"rigorous" or invariable exact correlation is not required. MPEP 2164.02 (citing *Cross v. Iizuka*, 753 F.2d 1040, 1050, 224 USPQ 739, 747 (Fed. Cir. 1985)).

As noted above, Applicants have submitted the '167 Application, which shows positive *in vitro* and *in vivo* results for ABDNAZ in various cancer models. As taught in the instant specification on pages 10-18, formulations and dosages of these therapeutically effective compounds for administration to a patient can be determined through routine experimentation known in the art. Applicants have thus shown that the X-nitro compounds can be used to treat conditions such as cancer and have disclosed the means for making such compounds and formulating them for treatment. The claims are therefore enabled, and Applicants respectfully request withdrawal of the rejection.

Double Patenting

The Examiner has provisionally rejected claims 1, 2, 7-8 and 15-18 over claims 17-21 of US Patent Application No. 11/502,810 on the grounds of nonstatutory obviousness-type double patenting. Since the instant claims or the claims of the '810 Application are subject to amendment, Applicants request that the Examiner hold the rejection in abeyance until claims have issued from the reference application or a double patenting rejection is the only outstanding rejection in either case.

Conclusion

In view of the foregoing, it is believed that all claims now pending this application are in condition for allowance.

Authorization is granted to charge any outstanding fees dues at this time for the continued prosecution of this matter to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (Client-Matter No. 067425-5001-US).

Respectfully submitted,

MORGAN LEWIS & BOCKIUS LLP

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